

Claims

1. A heating device (10,36,110), adapted for use with a drinking vessel suitable for containing a fluid, for example 5 an infant's feeding bottle, the device (10,36,110) including:  
means (12,112) for releasably connecting the device (10,110) to a vessel, so as to be in fluid communication therewith;  
inlet means (14,114) for receiving, in use, a flow of 10 fluid from a vessel;  
outlet means (16,116), for allowing, in use, a flow of fluid to leave the device (10,36,110), the outlet means (16,116) being in fluid communication with the inlet means (14,114); and  
15 means (18,122) for heating a fluid, in use of the device (10,36,110), as it flows between the inlet means (14,114) and outlet means (16,116);  
whereby, in use, a flow of fluid from a vessel flows through the device (10,36,110) from the inlet means (14,114) 20 to the outlet means (16,116) and leaves the device (10,36,110) through the outlet means (16,116) at an elevated temperature.

2. A heating device (10,36,110) as claimed in claim 1, 25 wherein the device (10,36,110) includes non-return means (64,146) formed and arranged to prevent fluid that has passed through the inlet means (14,114) from returning to the vessel.

30 3. A heating device (10,36,110) as claimed in either of claims 1 or 2, wherein the device (10,36,110) includes a non-return means (148) on the outlet means (16,116) to prevent fluid returning and coming into contact with the heating means (18,122).

4. A heating device (10,36,110) as claimed in any preceding claim, wherein the means for heating (18,122) a said flow of fluid as it flows between the inlet means (14,114) and outlet means (16,116) is a heat exchanger of the shell and tube type, or a heater element powered by electricity or an exothermic chemical reaction.

5. A heating device (10,36,110) as claimed in any preceding claim, wherein the inlet means (14,114) and outlet means (16,116) are connected by a heated passageway (120).

6. A heating device (10,36,110) as claimed in any preceding claim, wherein the inlet means (14,114) and outlet means (16,116) are connected by a helical path (124).

7. A heating device (10,36,110) as claimed in claim 6 when dependant on claim 5, wherein the helical path (124) is within the heated passageway (120) and releasably connected to the heated passageway (120).

8. A heating device (10,36,110) as claimed in claim 7, wherein the helical path (124) is disposable.

25 9. A heating device (10,36,110) as claimed in any preceding claim, wherein the device (10,36,110) includes a fluid sensor that activates the heating means, in use, when it senses the presence of a flow of fluid between the inlet means (14,114) and the outlet means (16,116).

30

10. A heating device (10,36,110) as claimed in any preceding claim, wherein the device (10,36,110) includes at least one thermistor (130,134,136) to measure the temperature of the liquid feed in at least one of the inlet means (14,114),

-17-

RECORDED BY  
AT 31/10/2003  
AT 31/10/2003

between the inlet means (14,114) and outlet means (16,116), or at the outlet means (16,116).

11. A heating device (10,36,110) as claimed in any preceding 5 claim, wherein the device (10,36,110) includes a thermostat to ensure the temperature of the feed does not exceed a predetermined temperature.

12 A heating device (10,36,110) as claimed in any preceding 10 claim, wherein the device (10,36,110) includes a bimetallic strip.

13. A heating device (10,36,110) as claimed in any preceding claim, wherein the device (10,36,110) includes a tilt switch 15 to switch the device off after a set time of being horizontal.

14. A heating device (10,36,110) as claimed in any preceding claim, wherein the heated passageway (120) includes a vent to 20 prevent a vacuum being formed within the heated passageway (120) and to ensure a steady flow of liquid through the heated passageway (120).

15. A drinking system for an infant, to provide an infant 25 with a liquid feed at an acceptable consumption temperature, the feeding system including:

a vessel suitable (38,160), in use, for storing a liquid feed at a storage temperature; and

30 a heating device (10,36,110) as claimed in any of claims 1 to 14,

whereby, in use, the liquid feed is drawn from the vessel (38,160), through the device (10,36,110), to an infant, and the temperature of the liquid feed is elevated as it passes between the inlet means (14,114) and outlet means

SEARCHED BY  
J.W.M.  
2004/054414

2004/054414

PCT/GB2003/005476

-18-

(16,116) of the device (10,36,110), from the storage temperature to an acceptable feeding temperature.